Rationale Sheet: Permit # 0IL00168*AD-OH0144983
Facility Name: Oxford Mining Company, LLC-Johnson Run Mine
Facility Address: Johnson Run Road, Section 18 and 24 of Trimble Township
Athens County, Ohio

For additional information about this rationale sheet or the draft permit, contact Scott Foster at (740)380-5277 (scott.foster@epa.ohio.gov).

Discharge Description

The Oxford Mining Company Johnson Run Mine is an initial application for a new surface mine. The company currently has a SMCRA application for the site submitted to ODNR/DMRM.

This facility has 5 discharge points, Outfalls 001, 002, 003, 004 and 005 which go to Johnson Run and discharge to the south of the property. Form 2D of the NPDES application states the flow discharged through Outfalls 001-005 are from sediment ponds which collect the runoff from the strip mine area, spoil piles, topsoil piles, haul road and non-paved parking area. The surface and seepage runoff is from a 299.3 acre strip and surface mine site.

Outfall to Johnson Run	Stream Mile
001	1.21
002	0.95
003	0.69
004	0.41
005	0.15

Receiving Water/Use Classification

Johnson Run is in the Sunday Creek drainage basin and has the following use designations as listed in the Ohio Water Quality Standards: warmwater habitat, agricultural and industrial water supply, and primary contact for recreation. It flows to the West Branch of Sunday Creek which is designated a Warmwater Habitat. Johnson Run enters the West Branch of Sunday Creek at RM 4.92.

Assessment of Receiving Water Quality and Discharge Impacts

Both Johnson Run and the West Branch of Sunday Creek are listed as impaired waters. Aquatic life use for West Branch is impaired by acid mine drainage. Johnson Run is habitat impaired from naturally occurring intermittent flow. The Total Maximum Daily Load (TMDL) for the Sunday Creek watershed specified acidity allocations, and corrective actions for the possible issues in the West Branch of Sunday Creek. The TMDL report is at: http://epa.ohio.gov/portals/35/tmdl/SundayCreekTMDL_aug05.pdf .

In this TMDL, more stringent wasteload allocations were not given to point sources because the existing pH controls on the discharges ensure that the point source discharges are not contributing significant

acidity to the stream. The TMDL states "Any water entering the study area with pH greater than or equal to 6.5 is beneficial in buffering acidity" (TMDL Report P23). Because these Oxford discharges will meet this pH requirement, Johnson Run and West Branch are judged to have sufficient capacity to assimilate these discharges at the draft limits. In addition, post-TMDL sampling of West Branch shows that downstream fish communities have improved to the point where they now meet WWH biological criteria.

Ohio EPA Biological Data					
	RM	IBI	MIwb	ICI	Attainment
Johnson Run 2001					
	2.4	44	NA	MG^{ns}	FULL
	0.1	26*	NA	F*	NON
West Branch Sunday Creek 2001					
	6.2	38*	7.1*	42	PARTIAL
	1.8	38*	8.2^{ns}	48	PARTIAL
	0.1	38*	8.1^{ns}	36	PARTIAL
West Branch Sunday Creek 2010					
	6.2	42^{ns}	8^{ns}	--	(FULL)
	1.8	48	8.4	--	(FULL)
	0.1	34*	8^{ns}	--	(PARTIAL)
Ohio EPA Biological Criteria for Headwaters		44	--	36	
Ohio EPA Biological Criteria for Wading Sites:		44	8.4	36	

* = significant departure from criteria

ns = nonsignificant departure from criteria

Narrative macroinvertebrate criteria used instead of ICI:

E = Exceptional G = Good

MG = marginally good F = Fair

VP = Very Poor P = Poor

The Agency has conducted modeling to allocate the allowable discharge of pollutant parameters for the outfall at this facility. The conclusions and details of the analysis are described below.

Effluent Limits/Reasonable Potential Analysis

The draft effluent limits and monitoring requirements are shown in Table 1. The TMDL study identifies Johnson Run as being an intermittent stream. This causes WLAs to be set at the applicable WQS because critical flows in the stream are zero.

After appropriate effluent limits are calculated, the reasonable potential of the discharger to violate the WLA (and the WQS) must be determined. The concentration of each parameter from the application (or other representative data) is compared to the WLA to determine if reasonable potential exists. Any parameter that is judged to have reasonable potential must have limits and monitoring in the permit.

Each parameter is examined and placed in a defined "group". Parameters that do not have a WQS or do not require a WLA based on the initial screening are assigned to either group 1 or 2. Group 3 parameters do not need to be included in the permit; monitoring for these pollutants is optional. Group 4 pollutants must have a monitoring requirement in the permit, according to OAC 3745-1-07(A)(2). Group 5 pollutants must have limits and monitoring in the permit. TDS is a group 5 parameter.

The limits for total dissolved solids are water quality-based limits for this intermittent, low flow stream. The limits for TDS were determined by the wasteload allocation Ohio EPA performed using proposed discharge data supplied by the company included on Form 2D.

The outfall tables include monitoring requirements for metals which are normally associated with coal mining and cyanide, hardness- total, and phenolics based on 40 CFR 122.21(k)(5)(vi) and 40 CFR 122 Appendix D-Table III. These rules require monitoring data for these pollutants be collected within the first two years of discharge. An evaluation of the discharge monitoring reports (DMRs) will be conducted to assess the performance of the sediment ponds and reassess whether priority pollutants have the reasonable potential to contribute to WQS exceedances. The permit may be modified, if necessary, to include metals monitoring with limits on the discharge. A compliance milestone has been added to Part II-J of the permit which requires the permittee to file a report and evaluate discharge monitoring reports at the end of 36 months and report to Ohio EPA. The permit contains the precipitation exceptions and the specific language is in Part II, Item E.

The limits for total suspended solids, iron and manganese are treatment technology-based standards from the Federal Effluent Guidelines for the Coal Mining Point Source Category (40 CFR 434). Specifically, the New Source Performance Standards (NSPS) regulations found in 40 CFR 434.35 for Subpart C- Acid and Ferruginous Mine Drainage except as provided in 40 CFR 401.17, and 434.61, 434.62 and 434.63 of this part apply to Outfalls 001-005.

While NSPS rules also apply to pH, for the initial and final tables, limits proposed for pH are based on Water Quality Standards (OAC 3745-1-07) because Ohio WQS are more restrictive than NSPS.

Flow values were calculated using the USGS *Stream Stats* program. The flows, water quality criteria and background conditions are shown in Tables 3 and 4.

In addition to the other requirements, the permit contains storm water pollution prevention requirements in Part II of the permit. These conditions are a mandatory requirement for NPDES permits authorizing the discharge of storm water.

Toxicity Reasonable Potential

The draft permit does not include monitoring requirements or limits for acute toxicity because TDS and sulfate concentrations are expected to be present in levels that are not acutely toxic. The upper bound of TDS concentrations associated with acute toxicity is 3000 mg/l; the TDS limit for Outfalls 001-005 is 1500 mg/l, which is the water quality standard. Sulfate concentrations of 312 mg/l reported for Outfall

001-005 indicate that sulfate is likely to be below concentrations associated with acute toxicity (1200-2200 mg/l). Monitoring for sulfate is proposed to verify this. The values submitted for all parameters were from a similar pond believed to be identical and have the same effluent characteristics as the proposed ponds. Based on the evaluation procedures of OAC 3745-33-07(B), Outfalls 001-005 are placed in Category 4with respect to whole effluent toxicity, with monitoring not necessary at this time.

Information Regarding Certain Water Quality Based Effluent Limits

This draft permit contains proposed water quality based effluent limitations for parameters that are not priority pollutants other than pH. The following paragraphs explain how the limits may be implemented and any relief that may be applied for during the 30-day Public Notice period to the Ohio EPA explaining the technical and economically feasibility of the proposed limits (See the following link for a list of the priority pollutants:

http://epa.ohio.gov/portals/35/pretreatment/Pretreatment_Program_Priority_Pollutant_Detection_Limits.pdf .) In accordance with Ohio Revised Code Section 6111.03(J)(3), the Director established these water quality based effluent limits after considering, to the extent consistent with the Federal Water Pollution Control Act, evidence relating to the technical feasibility and economic reasonableness of removing the polluting properties from those wastes and to evidence relating to conditions calculated to result from that action and their relation to benefits to the people of the state and to accomplishment of the purposes of this chapter. This determination was made based on data and information available at the time the permit was drafted, which included the contents of the timely submitted National Pollutant Discharge Elimination System (NPDES) permit renewal application, along with any and all pertinent information available to the Director.

This public notice allows the permittee to provide to the Director for consideration during this public comment period additional site-specific pertinent and factual information with respect to the technical feasibility and economic reasonableness for achieving compliance with the proposed final effluent limitations for these parameters. The permittee shall deliver or mail this information to:

Ohio Environmental Protection Agency
Attention: Division of Surface Water
Permits Processing Unit
P.O. Box 1049
Columbus, Ohio 43216-1049

Should the applicant need additional time to review, obtain or develop site-specific pertinent and factual information with respect to the technical feasibility and economic reasonableness of achieving compliance with these limitations, written notification for any additional time shall be sent to the above address no later than 30 days after the Public Notice Date on the Public Notice document.
Should the applicant determine that compliance with the proposed water quality based effluent limitations for parameters other than the priority pollutants is technically and/or economically unattainable, the permittee may submit an application for a variance to the applicable water quality standard(s) used to develop the proposed effluent limitation in accordance with the terms and

conditions set forth in Ohio Administrative Code (OAC) Rule 3745-33-07(D). The permittee shall submit this application to the above address no later than 30 days after the Public Notice Date.
Alternately, the applicant may propose the development of site-specific water quality standard(s) pursuant to OAC Rule 3745-1-35. The permittee shall submit written notification regarding their intent to develop site specific water quality standards for parameters that are not priority pollutants to the above address no later than 30 days after the Public Notice Date.

Upstream and Downstream Monitoring

Monitoring for depth of water has been added upstream and downstream of the proposed mine. Daily visual monitoring of the stream along the active mine pit and of pump intervals has been added to Part II to monitor for stream de-watering.

Table 1. **Initial effluent limits and monitoring requirements for outfalls 0IL00168001-0IL00168005 and the basis for their recommendation.**

		Effluent Limits				
		Concentration		Loading (kg/day)		
		30 Day	Daily	30 Day	Daily	
Parameter	Units	Average	Maximum	Average	Maximum	Basis[b]
Flow	MGD	---------- Monitor ----------				M[c]
Precipitation	inches	---------- Monitor ----------				M[c]
Dissolved Solids	mg/l	1500	--	--	--	WQS
Suspended Solids	mg/l	35	70	--	--	NSPS
Settleable Residue	ml/l	---------- Monitor ----------				M[c]
pH	S.U.	---------- 6.5 to 9.0 ----------				WQS
Sulfate	mg/l	---------- Monitor ----------				M[c]
Hardness	mg/l	---------- Monitor ----------				M[c,d]
Cyanide, free	ug/l	---------- Monitor ----------				M,d[c]
Aluminum, T. R.	ug/l	---------- Monitor ----------				M[c,d]
Cobalt, T.R.	ug/l	---------- Monitor ----------				M[c,d]
Arsenic, T.R.	µg/l	---------- Monitor ----------				M[c,d]
Selenium, T.R.	µg/l	---------- Monitor ----------				M[c,d]
Thallium, T.R.	µg/l	---------- Monitor ----------				M[c,d]
Beryllium, T.R.	µg/l	---------- Monitor ----------				M[c,d]
Silver, T.R.	µg/l	---------- Monitor ----------				M[c,d]
Zinc, T.R.	µg/l	---------- Monitor ----------				M[c,d]
Cadmium, T.R	µg/l	---------- Monitor ----------				M[c,d]
Lead, T.R.	µg/l	---------- Monitor ----------				M[c,d]
Chromium, T.R.	µg/l	---------- Monitor ----------				M[c,d]
Copper, T.R.	µg/l	---------- Monitor ----------				M[c,d]
Antimony, T.R.	µg/l	---------- Monitor ----------				M[c,d]
Phenolic, 4AAP, T.	µg/l	---------- Monitor ----------				M[c,d]
Iron, T. R.	µg/l	3000	6000	--	--	NSPS
Manganese, T. R.	µg/l	2000	4000	--	--	NSPS
Mercury, T.	ng/l	---------- Monitor ----------				M[c,d]
Nickel, T. R.	µg/l	---------- Monitor ----------				M[c,d]

[b] Definitions:

M = Monitoring needed to characterize the effluent

NSPS-New Source Performance Standards-40 CFR Part 434.35 Subpart-C Acid and Ferruginous Mine Drainage

RP = Reasonable Potential for requiring water quality-based effluent limits and monitoring requirements in NPDES permits (3745-33-07(A))

WQS = Ohio Water Quality Standards (OAC 3745-1)

[c] Monitoring of flow and other indicator parameters is specified to assist in the evaluation of effluent quality and treatment pond performance.

[d] Monitoring for these parameters is required until two years after each discharge begins or until 12 sample results are obtained, whichever comes first. After that time, the monitoring requirement ceases.

Table 2. Effluent Characterization Based on Form 2D Data-1 data point (mg/l unless specified)

Parameter	Avg. Conc	Daily Conc
Total Suspended Solids	35	75
pH S.U.	6.5 to 9.0	
Iron	3.0	6.0
Manganese	2.0	4.0
Aluminum	2.0	4.0
Sulfate	312	1142
Flow Rate	0.025	0.050

Table 3. Water Quality Criteria in the Study Area

Parameter	Units	Outside Mixing Zone Criteria				Inside Mixing Zone Maximum
		Average			Maximum	
		Human Health	Agri-culture	Aquatic Life	Aquatic Life	
Aluminum	ug/l	--	--	--	--	--
Dissolved solids (ave)	mg/l	--	--	1500	--	--
Sulfates	mg/l	--	--	--	--	--

Table 4. Instream Conditions and Discharger Flow

Parameter	Units	Season	Value	Basis
Stream Flows				
1Q10	cfs	annual	0	USGS Stream Stats
7Q10	cfs	annual	0	USGS Stream Stats
Harmonic Mean	cfs	annual	0.37	USGS Stream Stats
Mixing Assumption	%	average	100	
	%	maximum	100	
Hardness, OMZ	mg/l	annual	129	ODNR samples upstream Johnson Run
Hardness, IMZ	mg/l	annual	129	ODNR samples upstream Johnson Run
Oxford Johnson Run Mine flow	cfs	annual	0.0557	Outfalls 1-5 combined flow permit app.
Background Water Quality				
Aluminum	ug/l		10	ODNR; 10/5/16; n=1; 0<MDL; ODNR Mine Sampling
Dissolved solids (ave)	mg/l		147	Sunday; 2002; n=1; 0<MDL; Sunday Creek Watershed Group
Sulfates	mg/l		67	ODNR; 10/5/16; n=1; 0<MDL; ODNR Mine Sampling

bcc: official file copy w/attachment(s)
Region 5 FOIA Officer (MI-9J)

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